

# PATENT ABSTRACTS OF JAPAN

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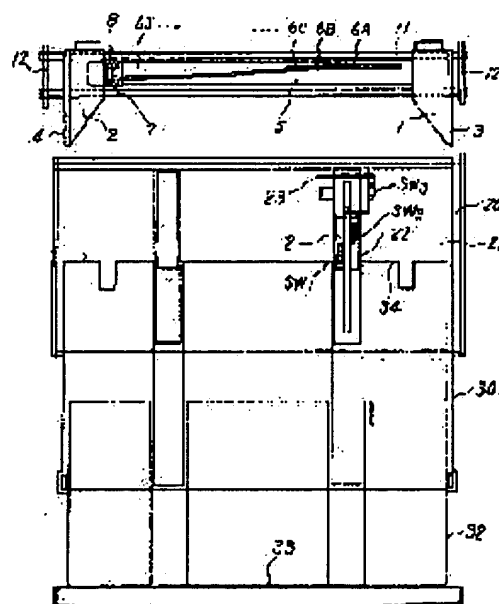
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## (54) PAPER SHEET SIZE JUDGING DEVICE

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To judge the size of a stocked paper sheet.

**SOLUTION:** A pair of hoppers 1, 2 are move while matching with the width of a paper sheet and the displacement at this time is ranked from the position of the paper longitudinal direction of the step shape grooves 6A, 6B,...6J by a paper sheet size provided on the detection plate 5 of one side hopper 1, while the displacement of the paper longitudinal direction of the rear end press plate 23 of the paper sheet is ranked by two detection switches SW1, SW2 and the paper sheet size stored in a cassette main body 20 is judged based on the data by these two digital rank.



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CLAIMS

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[Claim(s)]

[Claim 1] The rank exception of the paper width direction which displaced relatively according to the dimension of the cross direction of a form, and was established in one side A stair-like slot, The member of the pair which ranks a form as a cross direction with the location detection means of the paper longitudinal direction like each part of the above-mentioned stair-like slot established in another side, The member which ranks a form as a longitudinal direction with a means to displace to a longitudinal direction according to the dimension of the longitudinal direction of a form, and to detect the variation rate, A means to judge the size of a form based on the data ranked by both the above-mentioned members, and paper-size judging equipment characterized by constituting "Be alike."

[Claim 2] Paper-size judging equipment according to claim 1 characterized by constituting both the above-mentioned members as a member which regulates the location of the cross direction of a form, and a longitudinal direction.

[Claim 3] Paper-size judging equipment according to claim 1 characterized by constituting as a member which has the detected protruding line of two articles which could shift the location to the paper longitudinal direction and protruded on it so that it might correspond to two detection means which could shift the location and arranged the above-mentioned member which ranks a form as a longitudinal direction in the paper width direction on the holddown member.

[Claim 4] Paper-size judging equipment according to claim 1 characterized by constituting so that it may consider as the data which should also judge the data of a platen gap in addition to the data from both the above-mentioned members as a means to judge the size of a form.

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the size judging equipment of the form applied to a printer, a copying machine, etc.

[0002]

[Description of the Prior Art] The recording device is requested to write in the contents of record appropriately according to the size of a form, the class of form, etc., and it needs to specify the size of the form by which the stack was carried out to this as it.

[0003] However, since the equipment which was generally conventionally used as equipment which measures the width or die length of a form, or has been proposed was what outputs the contents of detection with an analog quantity, it had un-arranging [ that size of the form which exists innumerable could not be exactly specified even if a slight difference is in a cut dimension ].

[0004]

[Problem(s) to be Solved by the Invention] This invention was made in view of such a problem, and the place made into the purpose is to offer the new equipment which can judge correctly the size of the form by which the stack was carried out, even if the difference in some is in a cut dimension.

[0005]

[Means for Solving the Problem] namely, this invention as paper-size judging equipment for attaining such a technical problem The rank exception of the paper width direction which displaced relatively according to the dimension of the cross direction of a form, and was established in one side A stair-like slot, The member of the pair which ranks a form as a cross direction with the location detection means of the paper longitudinal direction like each part of the stair-like slot established in another side, According to the dimension of the longitudinal direction of a form, it displaces to a longitudinal direction, and constitutes "Resemble the member which ranks a form as a longitudinal direction with a means to detect the variation rate, and a means to judge the size of a form based on the data ranked by these members."

[0006]

[Function] Thus, by having constituted, the size of the stack form based on the data with which the cross direction of a form and the longitudinal direction were each ranked is judged.

[0007]

[Embodiment of the Invention] Then, the example of this invention is explained below. Drawing 1 and drawing 2 show the whole picture of the judgment equipment of the paper size which makes one example of this invention.

[0008] The hopper of a pair shown with signs 1 and 2 in drawing It is what operates so that the front end section of the form held in the cassette may be pushed up and the top form may be contacted to a pickup roller 11. These hoppers 1 and 2 It is constituted so that it can respond to the width of the laid form and may displace relatively [ cross direction ] mutually, after the guide shaft 13 attached in the machine frame 12 of pudding \*\*\*\*\* or the body 10 of a copying machine free [ vertical movement ] is equipped free [ sliding ].

[0009] The edge guides 3 and 4 which carry out positioning regulation of the form at a cross direction are set up by these hoppers 1 and 2 in the shape of L character on the outside. On the other hand, inside [ it is these hoppers 1 and 2 ] in this example moreover, in the hopper 1 on the right-hand side of drawing 2 The long detection plate 5 is being fixed to the cross direction in one. To this detection plate 5 Ranked slots 6A, 6B, and

6C of every ten dimension convenience of each paper-size W as shown in Table 1 .... As 6J were prepared in the direction of a printing digit continuously and stair-like and it was further shown in the hopper 2 of another side at drawing 3 These slots 6A, 6B, and 6C .... by attaching the pin 7 which slides on the inside of 6J in the sense which intersects perpendicularly with a paper width movable, and detecting the variation rate of this pin 7 by the potentiometer 8 It is constituted so that the size of the laid form may be ranked as a cross direction and may be detected in digital ones.

[0010] In addition, the sign 14 in drawing shows the paper feed roller pair which sends into the basis of a recording head 15 the form in the cassette 20 pulled out by the pinch roller 11.

[0011]

[Table 1]

	左右のエッジガイド間隔: W(mm)
A	$98 \leq W \leq 108.6$ 及び $123.4 \leq W \leq 143.3$
B	$161.6 \leq W \leq 187.8$
C	$196.6 \leq W \leq 232.1$
D	$238.1 \leq W \leq 260.6$
E	$276 \leq W \leq 283$
F	$293.6 \leq W \leq 300.6$
G	$325.4 \leq W \leq 332.6$
H	$349.6 \leq W \leq 367.6$
I	$411 \leq W \leq 423.1$
J	$429.1 \leq W \leq 441$

[0012] On the other hand, the guide slot 22 which extends in the longitudinal direction of a form is formed on the paper installation side 21, and the slider 25 equipped with the back end pressure plate 23 which can rise and fall freely is attached here free [ sliding ] at the body 20 of a cassette which a point is made to approach hoppers 1 and 2 and equips with it.

[0013] This back end pressure plate 23 is that to which die length presses down the back end of the form to 305mm. As shown in drawing 4, so that it can fold up to the form of the die length beyond it It is held in the state of a standing position by inserting downward protruding piece 23a which protruded on the back end pressure plate 23 in upward insertion slot 24a prepared in the interior material 24 of a fixed rotation proposal. Moreover, by \*\*\*\*(ing) to the interior material 24 of a fixed rotation proposal, and rotating this plate 23, after pulling out protruding piece 23a, it is constituted so that this plate 23 can be contained in the depression 26 established in the slider 25.

[0014] As shown in drawing 5, a location can be shifted, the 1st thru/or 3rd detected protruding line 26, 27, and 28 projects in parallel with the longitudinal direction of paper in the paper width direction, and is formed in that inferior surface of tongue in it, and it is constituted by this slider 25 so that the 1st and 2nd pilot switch SW1 and SW2 prepared in the body 20 of a cassette can detect, respectively.

[0015] Namely, when the guide slot 22 is made to meet and it is made to move to the location supporting the form the tip of the body 20 of a cassette to whose die length is 305mm about a slider 25 as shown in drawing 6, By whether two pilot switches SW1 and SW2 which could shift the location to the paper width direction and the longitudinal direction, and were arranged in them detect these detected protruding lines 2, 27, and 28 It is constituted so that the combination of the output signal of these pilot switches SW1 and SW2 can detect the die length of a form in digital one according to a rank from a field to d field. This sake, The 1st detection protruding line 26 is applied to the point approach of the body 20 of a cassette from the longitudinal direction center section of the inferior surface of tongue of a slider 25. Moreover, the 2nd detection protruding line 27 It applies to a center section from the back end section approach of the body 20 of a cassette. Further the 3rd detection protruding line 28 By applying to the point approach of the body 20 of a cassette, projecting, respectively and forming from a center section, on the same Rhine as the 2nd detection protruding line 27, it is constituted so that the die length of a paper size as shown in Table 2 can be detected according to a rank.

[0016]

[Table 2]

SW1	SW2	SW3	紙長ランク
1	1	0	a
1	0	0	b
0	1	0	c
0	0	0	d
0	1	0	e
1	1	1	e

[0017] On the other hand, the paper installation plate 30 which is guided in the guide slot 22 at that back end section, and slides on a longitudinal direction is formed in this body 20 of a cassette possible [ a cash drawer ]. Further to this paper installation plate 30 The back end presser-foot accessory plate 32 which formed the paper bail 33 in the back end is formed in the longitudinal direction free [ sliding ]. As this paper bail 33 was made to contact the back end side of the body 20 of a cassette, where the back end presser-foot accessory plate 32 and the paper installation plate 30 are contained in the body 20 of a cassette While making it face in the detection field of the 3rd pilot switch SW3 which formed the detecting element 34 which made the lower limit of the back end presser-foot accessory plate 32 project in the body 20 of a cassette and making a receipt condition detect It is constituted so that the longitudinal direction dimension of a form 305mm or more can be ranked with the combination of each output signal of this 3rd pilot switch SW3 and the 1st and 2nd above-mentioned pilot switch SW1 and SW2.

[0018] In addition, the sign 36 in drawing shows the guide plate of manual bypass paper which prepared it as covered the top face of a cassette 20, and 37 shows the runoff tab prepared in the back end free [ closing motion ].

[0019] Thus, in the constituted example, where the back end pressure plate 23 is stood to a form with size small now comparatively, a form is laid in the body 20 of a cassette, and while moving on either side [ of hoppers 1 and 2 / both / both / one side or ] and positioning the cross direction of a form with the edge guides 3 and 4 on it, the back end of a form is positioned with the back end pressure plate 23.

[0020] By this actuation, the hoppers 1 and 2 on either side are relatively displaced so that it may correspond to the width of a form. This amount of displacement Slots 6A, 6B, and 6C established in the detection plate 5 .... It is detected by the potentiometer 8 as a variation rate of the paper die-length direction of the pin 7 which slides on the inside of 6J. The amount of displacement of the back end pressure plate 23 displaced so that it might be ranked as either of A-J and might correspond to the die length of a form Similarly it is ranked as any of a-d by the combination of each output signal from the 1st and 2nd pilot switch SW1 and SW2 which detected each \*\*\*\*\* protruding lines 26, 27, and 28 of slider 25 inferior surface of tongue.

[0021] moreover, when the die length of paper exceeds 305mm After pulling up the back end pressure plate 23, solving engagement to insertion slot 24a and protruding piece 23a and making this lodge, The back end of the form which pulled out and laid the back end presser-foot accessory plate 32 behind the body 20 of a cassette will be pressed down, and the dimension of the longitudinal direction of a form will be ranked by the combination of the 1st thru/or each detection output of the 3rd pilot switch SW1, SW2, and SW3 as e by this.

[0022] Thus, it is ranked, and after the data of each rank of the paper width inputted into the printer or the body of a copying machine and paper die length are \*\*\*\*\* (ed) with the data written in the dictionary, as [ paper / domestic ] shown in Table 3, as shown in Table 4, about overseas paper, size is judged, respectively.

[0023]

[Table 3]

紙 長					
紙巾	a	b	c	d	e
A	A 6				
B			B 5		
C			A 4	Letter	Legal
D		B 5 (L)			B 4
E		Letter(L)			
F		A 4 (L)			A 3
G					A 3 +
H		Legal(L)	B 4 (L)		B 3
I			A 3 (L)		A 2

[0024]

[Table 4]

紙 長					
紙巾	a	b	c	d	e
A		Statement			
B		A 5	B 5	Executive	
C	Statement(L)		A 4	Letter	Legal
D		B 5 (L)			B 4
E		Letter(L)			Ledger
F		A 4 (L)			A 3
G					A 3 +
H		Legal(L)	B 4 (L)		B 3
I			A 3 (L)		A 2
J					U S C

[0025] By the way, although the above explains this invention by the example which carries out paper feed as pin center, large criteria, in the case of the paper feed on the basis of 1 side, what is necessary is just made to rank the paper width direction by fixing one side of hoppers 1 and 2 and moving the hopper 2 of another side on the basis of this like a printer.

[0026] Moreover, in the thing equipment which adjusted the platen gap like a printer according to the thickness of paper to be used, based on the data of this adjustment actuation, and each rank data of the paper width direction and the paper die-length direction, the size of the domestic paper in pasteboard mode and the size of overseas paper can be judged, as shown in Table 5 and 6, respectively.

[0027]

[Table 5]

紙 長	
紙 巾	a
A	ハガキ
B	
C	往復ハガキ

[0028]

[Table 6]

紙 長			
紙 巾	a	b	c
A	A6 Index	IndexCard 5*8''	
B			
C	Envelope DL	Envelope C5	IndexCard 8*10''
D	Envelope#10		

[0029]

[Effect of the Invention] The member which ranks a form according to a cross direction based on the location of the paper longitudinal direction of a stair-like slot the rank exception of the paper width direction which displaced corresponding to the cross direction dimension of a form, and was established in one side according to this invention as stated above, Since the size of a form was judged based on the data which displace that it should correspond to the longitudinal direction dimension of a form, and are obtained from a rank \*\*\*\*\* member by the longitudinal direction in a form The form of the various sizes used for a printer or a copying machine based on opium poppies with a rank and these ranked data is distinguished correctly, and it can come and perform making the contents which should be recorded according to the size of a form write in according to the cross direction of a form, and a longitudinal direction.

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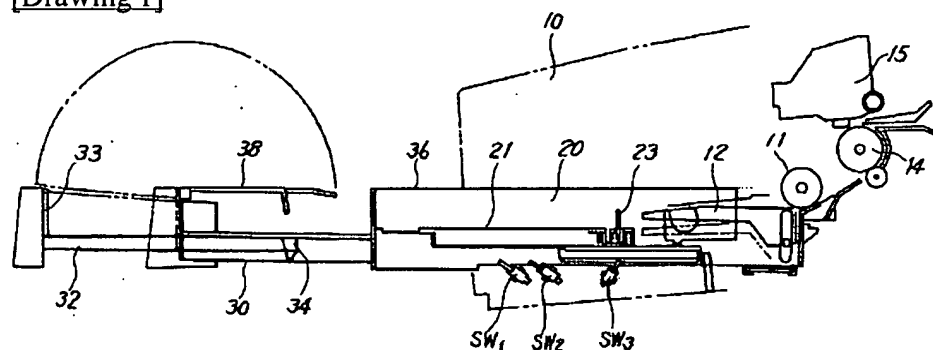
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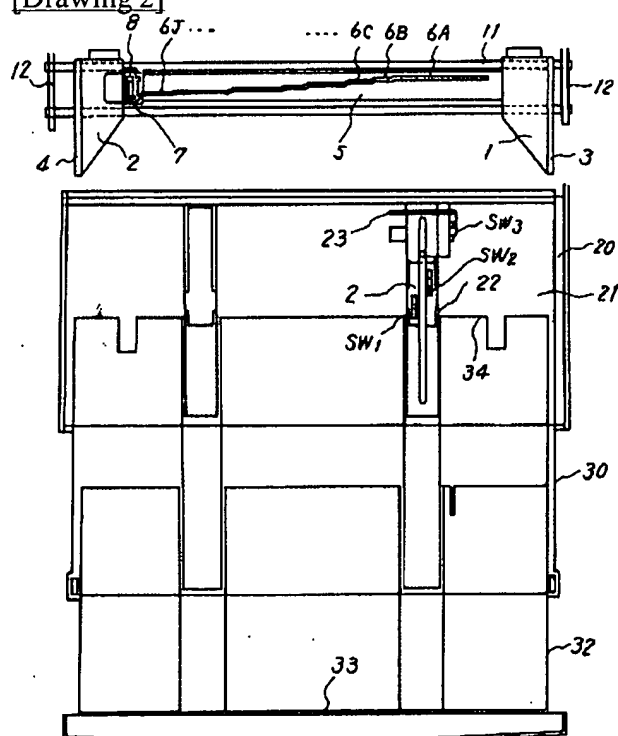
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## DRAWINGS

[Drawing 1]

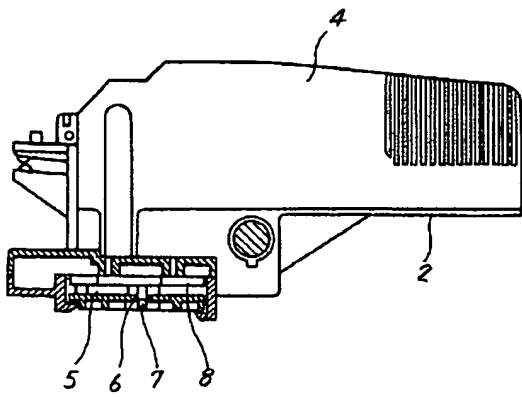


[Drawing 2]

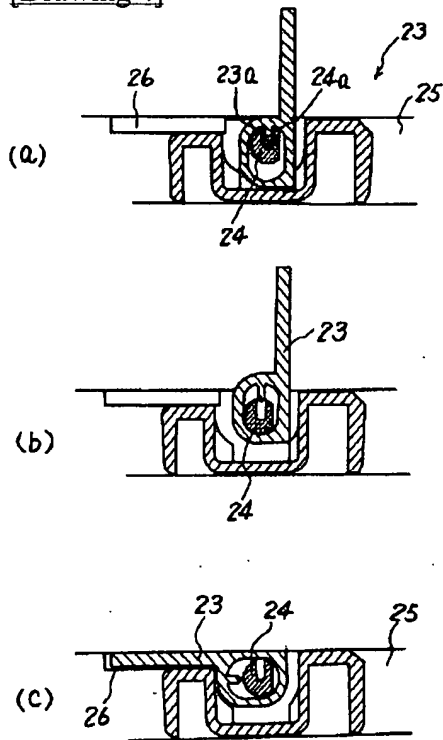


[Drawing 3]

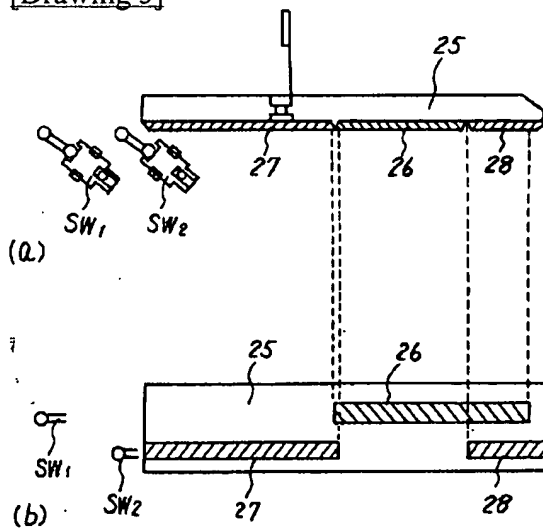




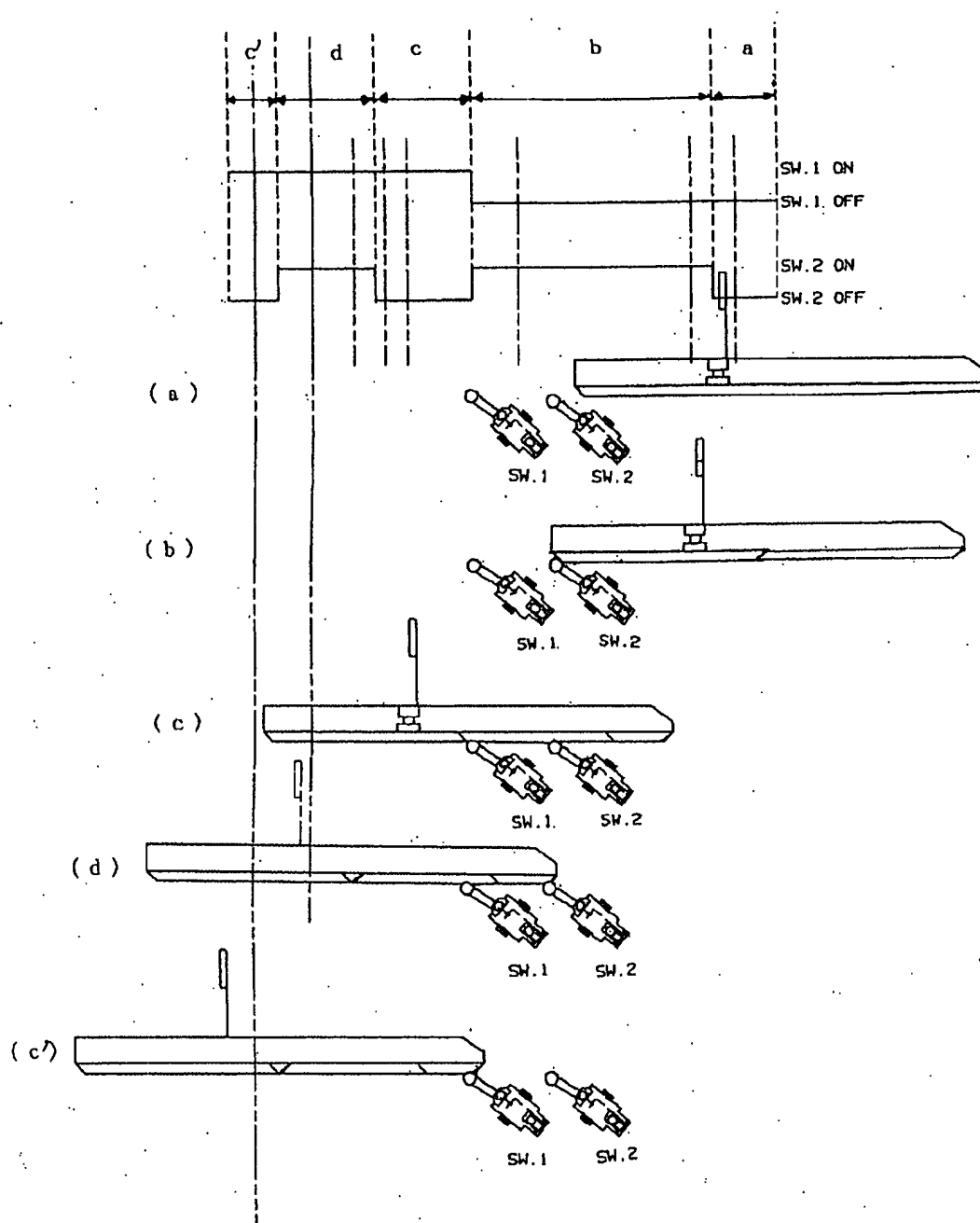
[Drawing 4]



[Drawing 5]



[Drawing 6]



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